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Approved For Release 2003/03/28 : CIA-RDP78B05171A000200030003-2

NPIC/TSSG/RED-037-70
26 January 1970

MEMORANDUM FOR: Branch Chiefs, Research & Engineering Division, TSSG

SUBJECT : Additional Instructions Concerning FY-71 R&D Budget Submissions

REFERENCE : NPIC/TSSG/RED-034-70, dated 23 January 1970 re Subject

1. In addition to the instructions contained in the reference, the following information is also pertinent to the subject R&D budget submissions requested therein.

2. Miscellaneous Services Contracts: Carefully review the items budgeted under Miscellaneous Services Contracts in the past. Most of these should now be included in the R&D Budget. Only those items which cannot logically be considered as directly related to our R&D program should be considered for Miscellaneous Services type contracts. On the basis of a review of the FY-70 Miscellaneous Services Contracts, it appears that all of them would have been in the R&D Budget under this concept.

3. R&D Categories: For the purpose of coordinating the budget submissions it is necessary that specific assignments be made for each category similar to those made for our FY-70 Mid-Year Review. Accordingly, the project submissions should be made through the assigned coordinator for the respective category to which your projects belong. If the budgetary guidelines are not easily reconciled in this manner, the category coordinator should consult the Special Assistant, RED for assistance. R&D category coordination assignments are as follows:

- a. Category I. Imagery Interpretation Process Research - Chief, ATB.
- b. Category II. Imagery Information Technology - Chief, SRB
- c. Category III. Image Analysis & Manipulation - Chief, ATB
- d. Category IV. Image Interpretation Instruments & Techniques - Chief, SDB

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- e. Category V. Reproduction - Chief, SDB
- f. Category VI. Mensuration - Chief, SDB
- g. Category VII. Test & Evaluation - Chief, SDB
- h. Category VIII. 

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Special Assistant for Plans & Applications, RED

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I. Categories

1. Imagery Interpretation ~~Process~~ Research
2. Image Analysis & Manipulation
3. Information Technology
4. Reproduction Materials & Equipment
5. Imagery Interpretation Equipment and Techniques
6. Mensuration Equipment and Techniques
7. Test and Evaluation Equipment and Techniques
8. Management Support

I, IMAGERY INTERPRETATION PROCESS RESEARCH

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This category includes research directed toward obtaining a basic appreciation of the nature of the imagery interpretation process, as well as a more complete understanding of the interpreter, his methods of operation, his thought processes, and his interface with exploitation equipment. It includes a detailed investigation of the human element of photointerpretation -- his responses to, and functions within, operational processes. Included are the determination and implementation of human factors engineering principles of equipment and systems. The research efforts provide scientific and technical support to Center personnel selection and training programs. The avowed good of these efforts is the improvement of the end product of the photointerpretation process through increases in the efficiency of the human elements involved.

Examples:

TICOF; Vision Testing Program, PI Process Research Program, exploitation chip evaluation, Human Engineering Design Guide; numerous PI Performance Measures, including Absolute Accuracy of Mensuration, Hunting and Reasoning, Assessment of Photointerpreter Target Knowledge, and effects of photographic and ground resolution on mensuration and interpretation.

II, IMAGERY INFORMATION TECHNOLOGY

This category includes the entire flow spectrum of all information that can be handled most economically and/or expeditiously by other than conventional computer associated equipment or by conventional manual manipulation. It includes the selection, input, update, storage, transportation, transmission, search, manipulation, and output of textual and pictorial information. It encompasses the initial entry, editing, approval, and recall of report information, the production of graphics and the publication of all associated materials.

Examples

Microfilm, microfiche, aperture card, etc. reader	
Chip Makers	Automatic Advanced Editing Equipment
Film Handling Equipment	Reporting Techniques
Facsimile Transmission	Typesetting Equipment
Information Display Consoles	Display Size Typesetting
Graphics Production Equipment	Printing Techniques & Printing
	Continuous Tone Lithography

III. IMAGE ANALYSIS AND MANIPULATION

This category includes the complete span of image formation and reconstruction in order to allow the most effective extraction of information by the human interpreter. It comprises the study of the image structure, sensitometric properties and other parameters for the purpose of determining the relation of these functions to the image forming process to image quality measures and to the rate and absolute amount of information extraction. It includes the initial formation, duplication, enhancement, and alteration to the imagery by optical, chemical, electrical, and digital techniques and the measurement of the effectiveness of these techniques.

Examples

Determination of Microimage Characteristics	Color Film Value
Determination of Image Quality Measures	Bi-Color Value
Quality Measurement Devices	Dual Gamma Film Processing
Definition of NPIC Quality Judgements	Coherence Studies
Image Parameter Specifications	Hybrid Image Manipulation
Recording System Parameter Specifications	Tone Reproduction
Statistical Determination of Processing Parameters	ATR Image Specifications

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IV. Image Interpretation Instruments & Techniques

Encompassed within this category is the research and development of those advanced techniques and equipment required to extract the maximum information content from reconnaissance imagery--both conventional black and white and multi-spectral. The category includes the broad group of direct and rear projection viewing instruments--both monoscopic and stereoscopic--used to scan and study imagery. It includes auto correlation techniques, laser displays, image intensifier displays and Automatic Target Recognition techniques and equipment and other techniques designed to help automate the imagery interpretation function.

Examples:

Microstereoscope

Rear Projection Viewers

Automatic Stereo Scanning Equipment

Anamorphic Viewers

Image Comparison & Change Detection Equipment

Automatic Cloud Screeners

U.V. Rear Projection Viewers

Optical Component Development

V ~~REPRODUCTION MATERIALS & EQUIPMENT~~

Encompassed by this category is the investigative work and development necessary to provide NPIC with the advanced reproduction technology and capability which will permit the efficient production of copies of imagery at a quality commensurate with that of the original material. Included will be the development of materials and equipment which will anticipate and accommodate rapid changes in acquisition materials and methods so that high quality working copies may be quickly reproduced in response to specific exploitation requirements along with those materials and displays required to best ~~display~~ ^{reproduce} finished imagery derived information in pictorial form.

Examples

Dry Silver Film Paper & Equipment

Beacon Precision Enlarger

VI, ~~MENSURATION EQUIPMENT AND TECHNIQUES~~

This category includes the entire range of instrumentation and techniques used in deriving measurements, attitude determinations, and data reduction from imagery, tapes, and formats.

Included are basic research studies, investigations to improve existing equipment, and developing mensuration systems and techniques commensurate with proposed acquisition systems and requirements .

It encompasses stereo and mono comparators and plotters, data readers and reduction techniques, measuring projectors, and the techniques vary from simple verniers through sophisticated interferometer systems.

Examples

Analytical Stereo Plotters

Twin Stage Comparator

Stereo Comparators

Filar Eyepieces

Stellar Comparator

Chip Comparators

Dual Screen Measuring Projector

Data Block Reader

Stereo Point Transfer Device

Reticles and Pointing Techniques

Joystick and Track Ball Controls

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VII Test and Evaluation Equipment and Techniques

This category covers those projects leading to the development and purchase of those equipments and techniques necessary to determine the functional acceptability of exploitation instruments. These are test devices and procedures required during preacceptance and final testing of prototype instruments, both in-house and in the field, at a contractor's facility, or which ^{are} required to establish realistic parameters that may be specified as technical requirements or utilized as firm specification for development of future exploitation equipment.

Examples: Reticles

Sound analyzers

Photometers - visible and UV/IR

Optical instruments and devices

Resolution charts

Calibration grids

Collimators

Interferometers

Modulation Transfer Devices

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Management Support

This category includes that analysis, research and development effort directed toward developing management tools--both information and equipment--which will assist the Center's management to make objective decisions in preparation for the impacts upon the Center of future collection systems, and advanced exploitation technology. Involved are: the analysis of procedures, requirements, techniques, facilities and equipment; the design and integration of systems--including training and maintenance; and the development of techniques and equipment to facilitate future R&D planning and programming.